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forms a propagule, and then these with puny leaves; (2) *stricta*, found on the borders of the lake or in the old alluvial, therefore in less sterile quarters than the preceding; leaves more numerous, stout, but still of small size; (3) *intermedia*, growing on ground formed of a mixture of mud and clay, either on the borders of the lake or at a depth of from one to two metres; leaves quite intermediate in character between the previous variety and the next; (4) *clatior*, growing on the clayey depths, with long leaves. The first form is always found isolated, and as to its asexual reproduction there is nothing more to be said; but the other three, according as they are subject to more or less heat, present each three varieties characterized by the mode of reproduction. 1. *Sporifera*, isolated individuals, mostly furnished with well-developed sporangia, stem large, roots numerous, leaves large. 2. *Gemmifera*, few fertile sporangia, but most of the leaves are furnished with propagula, and these well furnished with leaves, generally dextral, stem fairly developed. 3. *Sterilis*, individuals growing in compact masses, stems and roots slender, leaves not numerous, long and narrow, fertile sporangia very rare, and more often undeveloped masses of cells or abortive propagula. It would seem as if these facts had a practical interest to the collector, who may find in them a guide as to where to look for fertile specimens.

**Bebb's Herbarium Salicum.**—We are in receipt of the first fasciculus of Mr. M. S. Bebb's *Herb. Salicum*. Any one who has ever seen Mr. Bebb's specimens knows just how perfect and complete this bundle is. In his work towards a monograph of North American Willows, Mr. Bebb has shown rare judgment and still rarer patience. How else could he have undertaken to let a little light through that dark maze of forms which meets the eye of every botanist who has dared to look at willows? Nowhere do lines between species run so indistinctly, in fact it can hardly be said that there are such lines. Now Mr. Bebb proposes to help us just where we so much need help, and every botanist should make it a point to contribute notes and specimens that this monograph may be as exhaustive as possible. Accompanying the very complete specimens of this fasciculus are full descriptions and very many drawings of leaves and capsules, the latter enlarged to a uniform scale of twelve diameters.

We can note but a few of the many things that catch a botanist's eye in looking through the bundle. One of the most satisfactory results is the settling of Muhlenberg's *S. myricoides*. Botanists have been inclined to give it specific rank, or to make it a variety of *S. cordata*, but Mr. Bebb shows conclusively that it is a hybrid from *S. cordata* and *S. sericea*.

Another very interesting hybrid is that from *S. petiolaris* and *S. candida*, species so dissimilar that a cross was hardly to be expected. In case it should become the custom to give distinct names to such hybrids, Mr. Bebb desires to call this beautiful willow *S. Clarkei*.

A new species is proposed under the name *S. glaucophylla* and there seems to be no reason why it should not stand. Mr. Bebb has

long been hunting a place for it, first making it a variety of *S. cordata*, then of *S. Barclayi*, but it seems specifically distinct from both. It is most nearly related to *S. cordata*, but is by no means like it in habit and can always be easily distinguished. It would more likely be mistaken for *S. discolor*.

Many other forms, especially hybrids, could be noted, but those given will suffice to show the nature and importance of the work. Again would we urge all botanists who are interested in the welfare of their science to communicate with Mr. Bebb in regard to any specimens or notes they may have that would be a help in studying our willows.—J. M. C.

### Leavenworthia in S. W. Missouri and N. W. Arkansas.—

On a recent trip to S. W. Missouri I was rewarded by finding a species of *Leavenworthia* growing upon the *debris* of eroded limestone rocks in rich springy soil. Though growing in rocky places it was not found on the top of flat rocks, the situation usually given in the books for them. I have hunted for them upon all the flat top rocks I could find in N. W. Arkansas and S. W. Missouri and have not found a single specimen in such a habitat. The specimens were growing with *Arenaria Pitcheri*, *Sisymbrium canescens*, occasionally a specimen of *Draba cuneifolia*, *Allium striatum*, *Oxalis violacea*, *Astragalus Mexicanus* and *A. distortus*. The following is a description of the species as made in the field from fresh specimens:

Root single, annual and running deep into the soil; leaves all radical and lyrate-pinnatifid; peduncles radical, one-flowered, elongated, sometimes as many as 20 from one root, 2'-5' high. Sepals more or less reddish-brown with a shade of purple; some were reddish brown the whole length, others have only a reddish-brown tip with a greenish-yellow base, while others are entirely greenish-yellow. Petals vary from reddish-brown to yellow like the sepals. Those flowers with dark reddish-brown sepals have the corolla distinctly reddish; some have a white blade and yellow claw, while some are light yellow throughout. The corolla has lighter corresponding shades than the calyx. Silique narrow oblong-linear, elongated after flowering, sometimes 1½' long, flattened parallel to partition, straight in perfect specimens; sometimes torulose in imperfect specimens. Style about as long as the width of the pod and club shaped; pod often shows a purplish tinge. Seeds broadly winged, orbicular, flat, from 1-9 in each cell. Radicle straight, at an angle of 45° or even at a right angle with the cotyledons. I am inclined to think the radicle becomes more oblique as the seeds mature.

The characters seem to apply to *L. aurea*, Torr., as described in the GAZETTE, March, 1880. I obtained excellent fruit specimens and fair flower specimens, but only a limited number of either. I can furnish a limited number of fruit and flower specimens to botanists interested in this genus for twenty-five cents, the specimens including both flowers and fruit and the postage paid.—F. L. HARVEY, *Ark. Ind. Univ., Fayetteville, Ark.*